

REMARKS

The following sections are responsive to and numbered in accordance with various numbered sections in the Office Action.

1,2 - A proposed drawing change is submitted herewith for changing reference numeral 28 in Fig. 7 to 128 in accordance with the written description. The objections stated in the Examiner's sections 1 and 2 are thus overcome.

3 - The requirement concerning illustrating the open top end of the cylinder is respectfully traversed. 37 CFR 1.83(c) states that a drawing is required "where necessary for the understanding of the subject matter sought to be protected" (emphasis added). The present drawing shows cylinders having a top end and the specification explains that the top ends are either open or closed. Taken together, the drawing and specification make it perfectly clear to any technically trained reader what is being described. Does the Examiner suggest that a drawing showing an open top end is necessary for his understanding? Would the Examiner have the slightest difficulty drawing a top view of an open cylinder?

4 - The submission of a terminal disclaimer is deferred pending indication of allowability of some claims. With certain claims, specifying a movable member having a closed end, it appears to Applicants that no double patenting issue is present.

7 - It is not understood how the legal principle stated by the Examiner is applicable against the present claims. Ex parte Wu refers to claims containing broad language followed by the phrase

"such as". No such phrase appears in the present claims. The Examiner appears to consider the term "preselected waves" in Claims 1 and 8 as a broad range limitation. It is not. The term merely provides antecedent language for what is later referred to. The term "preselected waves" provides, by itself, no description or limitation, broad or narrow, concerning the characteristics by which the waves are selected. Should the Examiner disagree, he is requested to further clarify how the claims recite indefinite range limitations.

8 - Claim 1 is a generic claim reading on all the disclosed embodiments. In Figs. 2, 2A, 3, 5 and 6, the term "water barrier" reads on the piston 12. Water flowing into the cylinder through its open top and bottom ends is impeded in its movements by the piston 12. If the piston were not a barrier to water flow, no transfer of energy between the water and the piston would occur. In Fig. 4, the water barrier is the turbine 40. While the turbine 40 clearly impedes water flow, the water is not blocked by the turbine but flows through it. In the embodiments illustrated in Figs. 2-6, the cylinder is stationary and the piston 12 and the turbine 40 are moved. Conversely, in the embodiments shown in Figs. 7 and 9, the cylinder is movable and the top, closed end of the cylinder is the piston or water barrier against which the water pressure works. While the claims do not address the issues raised by the Examiner concerning functional details, this is not the purpose of the claims which are intended to define the invention,

not describe it in detail. The latter function is provided by the specification and drawing. The claims are not indefinite because the term "water barrier" accurately defines the illustrated subject matter. To the extent that the terminology used might be excessively broad, so as to possibly read on the prior art, a rejection based on the prior art would be in order. Absent such prior art reading, an applicant can draft claims as broadly as possible. The MPEP, at Sec. 2173.04, explains that the breadth of a claim is not to be equated with indefiniteness. Indeed, owing to the extensive discussion in the MPEP concerning claiming requirements, if the Examiner is to repeat the 112 rejection, he is requested to cite specific sections of the MPEP in support of the rejection.

Claims 3 and 4 define respectively different embodiments of the invention generically defined in Claim 1. As above-noted, with an open-ended cylinder per Claim 3, the "barrier" (e.g., the piston 12 or the turbine 40) is within the cylinder. With a cylinder with a closed top end, the top end is itself the barrier.

In Claim 8 (similarly as in Claim 1), the claim language is intended to distinguish from the prior art (such as Frederiksson or Windle) which show cylinders dependent from, and moved by, floats on the water surface. In Applicants' claimed invention, there is no mechanical or structural element providing mechanical linkage between surface waves and the cylinder. The surface waves do, of course, act on the cylinders, but through pressure variations

transmitted directly through the water.

10. The principal reference relied upon by the Examiner is Frederiksson et al which shows an open-ended cylinder 14 dependent from a float 11 floating on the water surface and bobbing up and down in response to passing waves. Slidably disposed within the cylinder 14 is a piston 17. Because movements of the piston 17 tend to be impeded by the surrounding water, the piston tends not to move with the cylinder but out of phase therewith. The relative movements between the cylinder and the piston generate power.

It appears that the Examiner proposes to modify Frederiksson, according to Windle, by fixedly anchoring the piston 17 to the ocean floor and, according to Dick, replacing the surface float of Frederiksson with the variable buoyancy bag of Dick.

While the proposed modifications allegedly arrive at a structure according to Applicants' invention, the first question is why should such modifications of Frederiksson be made? The Examiner recognizes that there must be some motivation for making the proposed modifications and argues that the proposed changes are obvious means for making Frederiksson less expensive and less complex. However, the Examiner's argument is not supported by any evidence and appears to be pure speculation. Indeed, the argument appears to be incorrect. An advantage of the free floating system of Frederiksson is that an anchor is not required. It may not occur to the Examiner, but providing anchors strong enough to withstand the heaving motion of a float is actually quite difficult

and expensive. Thus, rather than making the system of Frederiksson less expensive and complex, the proposed modification appears to accomplish the exact opposite. Most significantly, however, the Examiner's position is neither proven nor correct on the face of the matter. Accordingly, the Examiner has not sustained his initial burden of providing evidence in support of his position.

Also, while it is appropriate for the Examiner to propose obvious modifications of prior art technology, it is inappropriate to propose modifications which change the principle of operation of a reference (see MPEP Sections hereinafter cited). Here, instead of the free floating apparatus shown in Frederiksson, the Examiner proposes anchoring a portion of the apparatus so that the freedom of relative motion obtained in the Frederiksson apparatus is no longer possible. Why, and to what technical end?

The substitution of the gas bag 6 of Dick for the float of Frederiksson also represents a major change in operation. With a float, bobbing motions are obtained in response to changing levels of the water surface caused by passing waves. Such changing water levels cause corresponding vertical oscillations of the Frederiksson surface float as well as the dependent cylinder. With the gas bag of Dick, buoyancy variations are caused by volume changes of the bag in response to pressure variations. The two mechanisms, one (Frederiksson), involving direct variable lifting of a float due to level changes, and the other (Dick), involving buoyancy variations due to volume changes, are completely different

and the proposed substitution does indeed involve a prohibited change in the principle of operation of the modified apparatus.

The claims distinguish from the references even when combined as proposed. Claim 1 specifies the depth location of the top and bottom ends of the cylinder when in use with preselected waves. By so identifying the location of both ends, the claims thus define the length of the cylinder. In no manner does the cited art show or suggest such cylinder length limitation.

Frederiksson shows a cylinder but, because it is rigidly dependent from a float, there is no design connection between the float length and the characteristics of the preselected waves.

Also, according to Applicants' claims, variations in water pressure differentials between the ends of the cylinder drive the apparatus. In an apparatus according to Frederiksson, with the bag 6 of Dick replacing the float 11, the apparatus is not driven by pressure differentials along the cylinder length, but by total pressure variations of the bag. Thus, Frederiksson, modified according to Dick, still does not correspond to Applicants' claimed structure and method of operation.

Claims 2 specifies a particular depth of the cylinder lower end. In Dick, the references to wavelength simply mean that the horizontal dimension of the bag 6 is small in comparison with the wavelength of the surface waves. This is because, if the bag is large enough to be both under a crest of the wave (increased water depth and pressure) and under a trough of the wave (decreased

pressure), the high and low water pressure effects would cancel one another for no effect on the bag volume. This concern, in Dick, over the horizontal dimension of the bag relative to wavelength is entirely unconnected with and not suggestive of the cylinder vertical dimension.

Claims 4-7 specify that the cylinder has a closed top end. Frederiksson, no matter how modified by the Examiner, must have an open top end (and an open bottom end) for flow of water through the cylinder and into contact with the piston 17. Claims 4-7 thus clearly define over the references.

New Claims 10 - 19 are added for further defining the invention over the prior art. New Claim 10 specifies that one of the member ends is closed against water flow. As earlier noted, the cylinder of Frederiksson must have both ends open, hence cannot be modified in accordance with Claim 10. Claim 10 also refers to water pressure variations and pressure differentials. Support for the claimed subject matter is in the specification; see, for example, the first paragraph of the Preferred Embodiments section.

Claim 11 specifies that the member is structurally supported solely by a stationary support, hence clearly distinguishes from all the prior art references which rely upon movable floats. While a float is specified in Claims 13 and 14, the float is actually part of the fixed, bottom support and does not contribute to movements of the member.

Additionally, the float of Claims 13 and 14 is particularly advantageous in deep water where the float can be anchored by cable with the rigid support required for the member being provided by a high degree of buoyancy of the float.

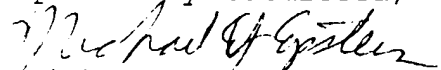
New Claim 18, to a method, also distinguishes from the prior art in that it requires the use of a member having a closed end driven into motion by varying water pressure differentials between the ends of the member.

Others of the claims specify features also not shown or suggested in the references.

In summary, Applicants' position is that the claims, when properly read against the specification, fully patentably define over the references, however combined. Additionally, applicants submit that the Examiner's proposed modifications of the prior art are improper and based, not upon the prior art itself, but on hindsight obtained from Applicants' own disclosure. In this connection, the Examiner's attention is directed to the MPEP beginning with section 2141.02. Of particular relevance is 2143.01, that the prior art must suggest the modification proposed by the Examiner; page 2100-124, that the mere fact that the references can be combined is no basis for so combining them in the absence of motivation provided by the prior art; and page 2100-125, that the proposed modification cannot change the operation of the reference.

Should the Examiner not be prepared to allow at least some of the claims, he is requested to telephone the undersigned. An in-person interview is possibly the most efficient way to advance the prosecution.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Michael Y. Epstein", written in a cursive style.

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